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ABSTRACT

This paper discusses factors that relate to the development of children's theory of mind. Cognitive and biosocial views of the development of theory of mind are distinquished. The paper maintains that all cultures recognize the intentional personhood of children in the first two years, though they vary in their methods of dealing with this personhood. In support of this claim, a study of the similarities and differences in the ways Western white middle-class parents and Samoan parents treat infants is cited. Some of the differences in socialization involve the ways cultures interpret subjective mental states. These interpretations are discussed in two ways. First, the role of social experience in the transformation from prereflective experience to reflective understanding of mental states is considered. The factors of children's experience of conflict between their intentions and others' intentions, and the role of caretaking adults, are discussed. Second, the structure of prereflective experience is discussed. Topics include the child's use of "no"; the development of a sense of self; and the role of bodily experience in the organization of higher order concepts. A list of 21 references is provided. (BC)

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From Anticipation to Reflection: Biological, Cognitive and Social Underpinnings of Children's Understanding of Intentionality

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From Anticipation to Reflection: Biological, Cognitive and Social Underpinnings of Children's Understanding of Intentionality

Carl N. Johnson

When Celia and Brad asked me to contribute to this symposium, it occured to me that I really didn't know much about the relation between social behavior and children's theory of mind. But I figured the task would impel me to think about this important issue. My fantasy was to describe a coherent theoretical framework for understanding the interrelation of biological, social and cognitive changes as they influence changes in the third year of life. But as a friend of mind is fond of saying, one never fantasizes in detail. As I began to consider the details of the project, I realized it was a fantasy indeed. The subject was simply too big and our knowledge too limited to provide a coherent framework. It occured to me, however, that my problems in making coherent theoretical sense are probably shared by 2-year-olds whose fantastic desires are also known to confront mundane reality and whose intitial efforts to make sense are not altogether coherent.

Let me start with a general observation (see Figure 1). Within developmental psychology the notion of a "theory of mind" has been addressed in two different ways. On the one hand, cognitive developmentalists have been preoccupied with the issue of when children develop a representational theory of mind, typically characterized as emerging at about age 4 years. These theorists - including Perner, Wellman, Astington among others (see Astington, Harris & Olson, 1988) - tend to describe children as small imitations of themselves, as little scientists autonomously struggling with the computational problems of developing a "representational theory of mind".

On the other hand, the work of people like Bretherton, Stern, Trevarthan and Butterworth, focused on the development of intersubjectivity in infants and toddlers, has stressed the fundamentally bio-social quality of development. The infant is variously depicted as being biologically attuned and facilitated by social transactions. This perspective is consistent with the an

evolutionary perspective, described by Whiten & Byrne (1988) in their book entitled Machiavellian Intelligence. The suggestion is that intelligence evolved to meet the practical demands of complex social life (socially clever organisms were more likely to survive and reproduce).

Given these two traditions, the obvious question is how the infant (and our theorizing) gets from its biosocial foundations to the cognitive theories at age 4 . I suspect that 2-year-olds have a lot to tell us about this transition, particularly with regard to how preverbal structures are transformed into reflective concepts, and how such cognitive change is embedded in social change. The "terrible two's" has long been recognized as major period of socialization during which infants are transformed into autonomous little kids whose willful desires confront new social demands and expectancies.

It is notable that the development of a rudimentary theory of mind, whether in infancy or early childhood, has been generally taken to be a culturally universal, maturational achievement. The fundamentals of a theory of mind, entailed in early communication and later belief/desire reasoning are regarded as prerequisites for human culture. Even the strongest proponents of cultural variation, who emphasize wide-ranging differences in folk psychology, nonetheless recognize that there is a common, universal core of understanding, emerging in the early years of life. Richard Shweder (1984), for example, states that "the force of interactional experience in infancy and early childhood with the physical and social world would quickly lead to a universal differentiation at the skin of the self from others and external events." (p. 12) Similarly, in his new book, Acts of Meaning, Jerome Bruner (1990) insists that the foundations of folk psychology are universal and biologically predisposed: "we come initially equipped, if not with a "theory" of mind, then surely with a set of predispositions to construe the social world in a particular way and act on our construals. This amounts to saying that we come into the world already equipped with a primitive form of folk psychology. (p. 73)"

It is worth looking more carefully at this universalist arguement. The claim is not that there is some innate biological module that unfolds, regardless of culture, but rather that biological, cognitive and social forces converge to define certain conditions of human experience and understanding. Thus, a primitive theory of mind rests on the fact that we are organisms with bodies that relate to the physical and social world "intentionally" via sensory, emotional and representational systems.

What role, then, does culture and socialization play in children's early understanding of mind? A reasonable claim, I think, is that all cultures come to recognize the intentional personhood of children in the first two years, although cultures vary in terms of timing and methods of dealing with this personhood.

The ethnographic work of Ochs & Schieffelin (1984) is particularly revealing in this regard. Table 1 summarizes their findings comparing three cultural groups. Under the first category, I have characterized their findings in terms of cultural differences in the perceived onset of personhood. Importantly, their evidence does not support the view of Stern and others that infants are universally treated as conversational partners, with biosocially orchestrated eye gaze, vocalization, and bodily alignment (as in White Middle Class families). While white Middle Class parents treat infants as intentional interactants from early on, the onset of such personhood appears to be later in the Kaluli and Samoan cultures. Among the Kaluli, it is the onset of the child's uses of the words "mother" and "breast" that prompts new treatment. Begging, a preverbal expression of desire, is regarded as natural for children whereas the Kaluli believe that assertive language must be directly taught. Among the Samoans, it is locomotion that marks the transition to personhood. Young children are viewed as being very willful in this culture, as expressed in their first word, "tae", meaning "shit".

The point is that while cultures vary in when and how they mark the onset of personhood, all cultures presumably mark the

change at some point in the first two years. This early personhood is variously defined by recognition of the child as a desirous and willful individual in relation to the demands of socialization.

How the child is socialized also varies tremendously. Ochs and Schieffelin (1984) distinguish two broad orientations. White Middle Class families typically to to great lengths to adapt the situation to the child (reflecting a child-centered orientation that pervades everything from communication to house proofing). In contrast, many traditional cultures aim more at adapting the child to the situation (i.e., expecting and teaching the child to adjust to social reality).

These differences in socialization are reflected in further differences in how cultures regard and interpret subjective mental states. Our culture, with its emphasis on trying to interpret and adjust to the communicative intentions and needs of the child, with the goal of "intersubjectivity", places special emphasis on the recognition of ambiguity and the formulation and verification of hypotheses. In this sense, the interpretation of actions, intentions, feelings and desires is generally "open" to discussion. Such openness is not so pervasive in other cultures. The Kaluli, for example, discourage the making of public claims about the feelings and thoughts of others, saying that "one cannot know what another thinks or feels." This restriction is limited, however, to public discourse about others. The Kaluli certainly interpret the behavior of others, privately, and readily talk about their own mental states. Among the Samoans, there is a different sort of restriction. It is generally assumed that actions are not open to interpretation; there is only one assignable meaning. Yet, there are notable exceptions, namely instances of teasing and bluffing where interpretation continues to play an important role.

In summary, I am arguing that all cultures must universally deal with the existence intentional organisms, and hence the interpretation of mental states. Early socialization in essence marks a certain stance about the relation between the child's goals and intentions and those of the culture. What differs, among cultures, is not whether subjective states are interpreted, but

when and how such interpretation is socially sanctioned. While children in all cultures become aware of the existence of mental states, the contexts and conditions under which such states are interpreted will vary greatly. Our culture engenders a more open attitude regarding alternative subjective views of events, emphasizing the intersubjective quality of meaning (although it would be a mistake to overstate the extent of such openness). In other cultures, interpretation is more restricted. This difference is reminiscent of Horton's (1967) distinction between "open" and "closed" intellectual predicaments, but focuses the analysis more specifically on the early pragmatic contexts in which interpretation is either open or socially restricted.

At its foundation, folk psychology rests on structure of human experience, generally characterized in terms of "intentionality". Biologically, socially and psychologically the human organism is designed to experience "aboutness" relations -- desires, beliefs, feelings -- between itself and the world. I have previously argued that the development of children's theory of mind is defined by the structure of prereflective experence of intentionality, combined with developing capacities to reflect on such experience (Johnson, 1988). For example, in Figure 2, I have depicted two classic dimensions of intentionality as organizing a semantic space (see Searle, 1983). Intentional states function to define basic directional relationships between the organism and the world. One dimension (vertical) has to do with "fit": Desires and intentions are directed toward fitting world to the the needs/goals of the organism; beliefs and perceptions, in contrast, are directed toward adapting the mind to fit the realities of the world. The second dimension (horizonal) is causality: In this case it is important that the organism distinguish between thoughts and actions that are self-caused from beliefs and perceptions that are caused by events in the world. This is not to say, of course, that children are always accurate in their self-world distinctions, nor that all self-world boundaries are not open to cultural influence. It is to say that the ability to moniter relations between self and world is an essential design feature of the human organism

(essential for any human action or enculturation), a design feature that is extended with the capacity to reflect upon and plan action, and a feature that is elaborated and transformed by culture.

Today, I want to elaborate on this story in two ways (see Figure 3). First, I want to consider the role of social experience in the transformation from prereflective experience to reflective understanding of mental states. Second, I want to further examine the structure and role of prereflective experience. I also recognize the importance of the third factor, cognitive maturation, but will limit my discussion to the first two.

Let me begin by describing a set of changes first described by Piaget (1973). While generally disparaging the egocentism of the young child in The Language and Thought of the Child, Piaget cautiously notes a set of achievements that occur at about age three years. Primarily, he emphasizes the emergence of why questions, generally asked in connection with human actions. But at approximately the same age he points out that the following achievements also occur: 1. Children's use of terms like perhaps, think and believe to denote a distinction between what is imagined and what is perceived. 2. The earliest lies which have to do with beliefs about the future. 3. The use of tenses and subordinate propositions.

Piaget (1973) summarizes these changes by saying that, "From now onwards the child distinguishes between the real as it appears immediately to his senses, and something which precedes events and underlies all phenomena. Let us describe this something by he very comprehensive term -- intention. The intentions of people and of things sometimes conform to the wishes of the child, sometimes they do not. Hence, also, the resistance put up by reality which necessitates lying. Intentions can sometimes be detected at once, and fit in spontaneously with the events, at other times they cannot, whence the necessity of reconstructing them, of supposing their presence behind things, in a word, of reasoning instead of looking on." (p. 234)

Although Piaget surely underestimated the richness and variety of young children's understanding (see Johnson, 1988),

recent research has generally confirmed the age changes described above. In their study of children's expressions of causality, Hood and Bloom (1979) found that children's why question appear at about 30 months and are focused primarily on psychological causality. Judy Dunn has reported similar findings and natural language data confirms that epistemic terms appear at this time, marking contrastives between anticipated events and reality (Shatz & Wellman & Silber, 1983).

What aspects of social experience might contribute to these changes? First of all, Piaget's account would lead us to expect that an important factor would be children's experience with "resistance" or conflict between its own desires and intentions and those of others. On this account, the best evidence and advice comes from the work of Judy Dunn (1988). Drawing from her careful observations of 2-year-olds in the home, Dunn describes a very Machiavellian child, trying to achieve his own goals in relation to the social expectancies and demands of others. In this regard she proposes that the "child's egoism...motivates him to understand others." (p. 82)

Beside these Machiavellian efforts, a second factor is the role that caretaking adults play in ecouraging children to reflect on their own actions and those of others. Hood and Bloom (1979) reported that children's first expressions of causality, early in the third year, focus primarily on their own intentions, looking forward to their fulfillment. In comparison, caretaking adults tend to be more reflective, looking backward to explain events. Presumably this reflective orientation is also fostered by adults who engage children in talk about past events as well as narrative and story telling (cf. Carrithers, 1991; Snow, 1990), all of which commonly mark efforts to socialize the child with regard to culturally prescribed meanings.

What about the role of prereflective experience? Here I want to expand on some old intuitions, particularly about the experience of will and the development of what Preyer called the "I-feeling" (see Kagan, 1981, pp. 131, 132, 148). Many nineteenth century observers commented on the child's experience of being an

intentionally acting, sensing and feeling organism. This tradition is preserved in Piaget's (1973) description of children's experience of "intentions" and "resistance".

What can we say about this early experience? First of all, I have argued elsewhere that this early experience is more discriminate and adaptive than Piaget supposed (see Johnson, 1988). In depicting young children as solopsistic adualists, Piaget neglected the rich information children have available for differentiating their own intentional stance in the world. Nonetheless, I believe he was correct to insist that we must understand how children's reflective understanding is influenced by their prereflective experience.

Consider two developmental transitions. First, early writers, included Piaget, noted that children's first uses of "no" toward the end of the second year, marks an initial contrast between the child's intentions and reality. Analyzing children's early uses of "no" in detail, Allison Gopnik (1984) offers a marvelously rich interpretation of this early understanding. She notes that children use the term "no" to reject proposals, to protest the actions of others, to try to do something and fail and to change their minds. These various uses commonly mark contrasts between the child's goal directed plan and resistance to its implementation.

Other recent researchers have expanded our understanding of the developing sense of self in the second year (see Kagan, 1981). The initial sense of agency, however, appears to be limited to the immediate context of ongoing action. "No" marks a contrast between future directed intentions and reality. The change during the third year is one where children begin to reflect upon the intentions, the subjective forces, that lie behind and prior to the child's immediate goals.

While this general pattern of change seems obvious enough, I think we need a more carefully consideration the structure and function of the prereflective experience. While I have described general dimensions of intentionality (Johnson, 1988), it is important to see how these dimensions are concretely realized. To me the most intriguing suggestions in this regard come from the

work of Mark Johnson (1987) in his aptly titled book, The Body in the Mind, which draws heavily from the work of Eve Sweetser on the use of modal verbs.

The idea is that bodily experience is organized in terms of "image schemata" (essentially sensori-motor schemata) which serve metaphorically organize higher order concepts. For example, Johnson (1987) describes a set of "force" schemata (see Figures 4 and 5) which include schemata of compulsion, blockage, counterforce, diversion, removal of restraint, enablement and attraction. These schemata have a strong experiential quality. For example, with regard to the experience of compulsion, Johnson notes that "Everyone knows the experience of being moved by external forces, such as the wind, water, physical objects, and other people. When a crowd starts pushing, you are moved along a path you may not have chosen, by a force you seem unable to resist." (p. 45) And describing blockage, Johnson says, "In our attempts to interact forcefully with objects and persons in our environment, we often encounter obstacles that block or resist our force. When a baby learns to crawl, for instance, it encounters a wall that blocks its further progress in some direction. The baby must either stop, ceasing its exertion of force in the inital direction, or it must redirect its force." (p. 45)

Not only are these bodily schemata rich and various, but they also serve to structure more abstract domains of understanding. In particular, the suggestion is that schematas of force, derived from being a body in the social and physical world, serve to organize senses of moral force, epistemic force, and illocutionary force.

Of course, this is largely speculation (and intuition) at this point. Note, however, that Wellman & Woolley (1990) have similarly depicted a kind of bodily schema in their characterization of a prerepresentational understanding of desire (see Figure 6). And the organizational role of prereflective schemata has been demonstrated in other domains. Resnick (1989) for example describes how number concepts are built out of protoquantitative schemata, such as the part-whole schema (another bodily schema described by Johnson, 1987). Recall too

Trabasso's (1975) convincing evidence showing that children's early understanding of transitivity depends on matters of perception and imagination, as distinct from strictly logical deduction. My bet is that children's early understanding of mind will similarly rest on image schemata, as opposed to a purely deductive "theory" (see also Harris, 1990).

In summary, there is good reason to suppose that the foundations of a theory of mind are overdetermined by converging social, experiential and biological forces (see Figure 3). While there is certainly considerable latitude in when and how children develop an undertanding of intentionality, it is hard to imagine any culture where children do not experience and reflect upon differences and relationships between inner states and outer reality. Such contrasts are intrinsic to the experience of being an agent as well as the universal goal of socializing agents.

An examination of the developmental changes between age 2 and 3 years will likely yield a better understanding of how the biosocial propensities of infants are connected to the theoretical achievements of 4-year-olds. To this end, I look forward to the time when the image of the child as a "little scientist", developing a representational theory of mind, is better connected to the image of the child as an embodied agent functioning in a social world.

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Table 1

WHITE MIDDLE CLASS	KALULI (New Guinea)	SAMOAN
ONSET OF PERCEIVED PERSONHOOD		
EARLY INFANCY	USE OF WORDS, "MOTHER, BREAST"	LOCOMOTION
	BEGGING = NATURAL ASSERTIVE LANGUAGE IS TAUGHT	FIRST WORD = "TAE" (SHIT) CHILD=WILLFUL
APPROACH TO SOCIALIZATION		
ADAPT SITUATION TO CHILD	ADAPT CHILD TO SITUATION	
ATTITUDES TOWARD SUBJECTIVE STATES		
OPEN INTERPRETATION	RESTRICITED INTERPRETATION	
RECOGNITION OF AMBIGUITY. FORMULATION & VERIFICATION OF HYPOTHESES.	DISCOURAGE CLAIMS ABOUT FEELINGS/ THOUGHTS OF OTHERS. TALK ABOUT SELF.	ACTIONS ARE NOT OPEN TO INTERP. EXCEPT TEASING, BLUFFING...

Adapted from: Ochs, E. & Schieffelin, B.B. (1984) Language acquisition and socialization: Three developmental stories and their implications. In R. A. Shweder & R. A. Levine (eds.) Culture Theory. New York: Cambridge University Press.

Figure 1

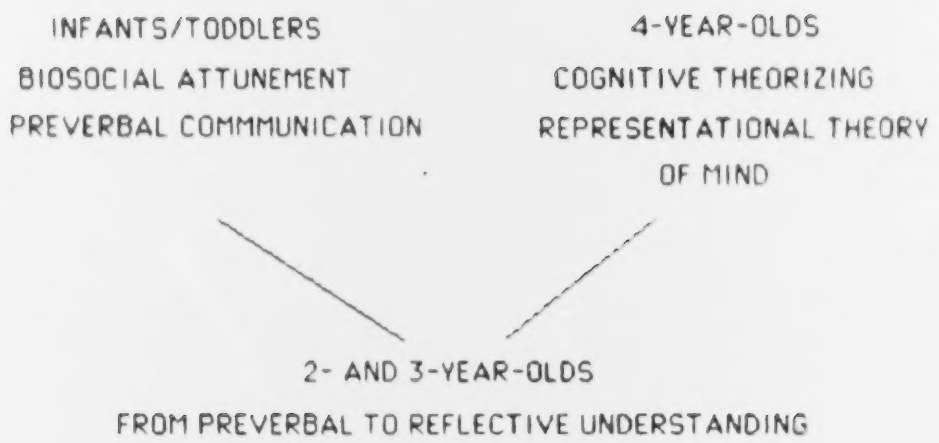

INFANTS/TODDLERS
BIOSOCIAL ATTUNEMENT
PREVERBAL COMMMUNICATION
4-YEAR-OLDS
COGNITIVE THEORIZING
REPRESENTATIONAL THEORY
OF MIND
2- AND 3-YEAR-OLDS
FROM PREVERBAL TO REFLECTIVE UNDERSTANDING

Figure 2.

Figure 3.1. Dimensions of experience

Figure 3

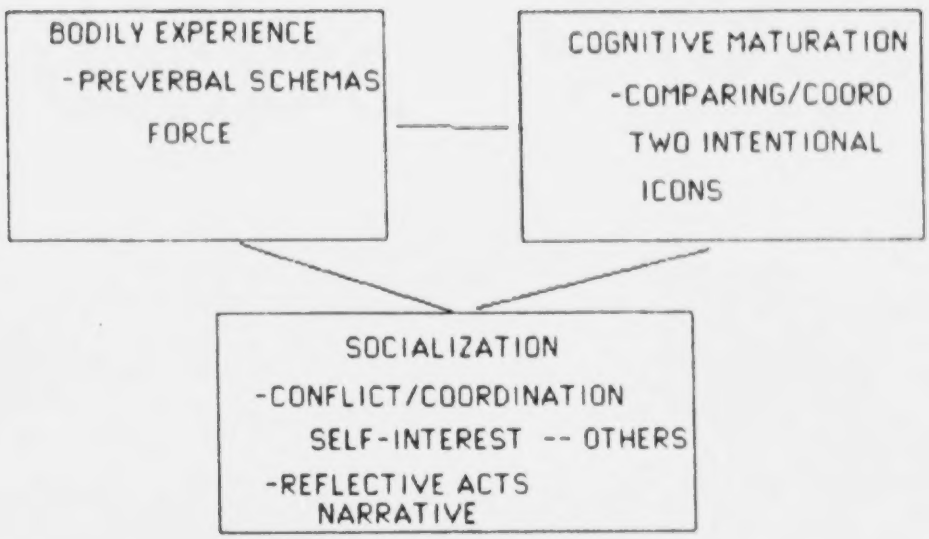

BODILY EXPERIENCE
-PREVERBAL SCHEMAS
FORCE
COGNITIVE MATURATION
-COMPARING/COORD
TWO INTENTIONAL
ICONS
SOCIALIZATION
-CONFLICT/COORDINATION
SELF-INTEREST -- OTHERS
-REFLECTIVE ACTS
NARRATIVE

Figure 4

COMPULSION

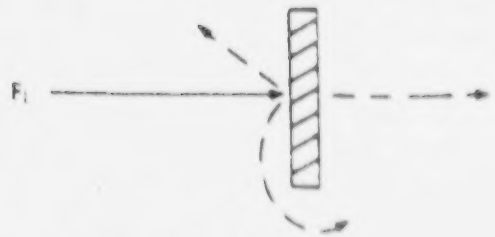


FIGURE 7 BLOCKAGE

From: Johnson, M. (1987) The Body in the Mind: The Bodily Basis of Meaning, Imagination, and Reason. Chicago University of Chicago Press, pp. 45 - 47.

Figure 5

FIGURE 11. ENABLEMENT

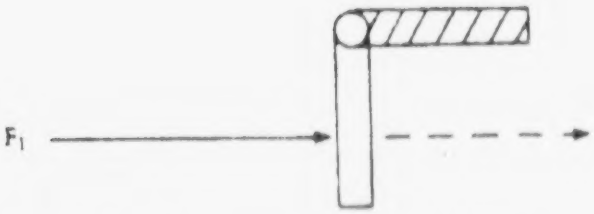
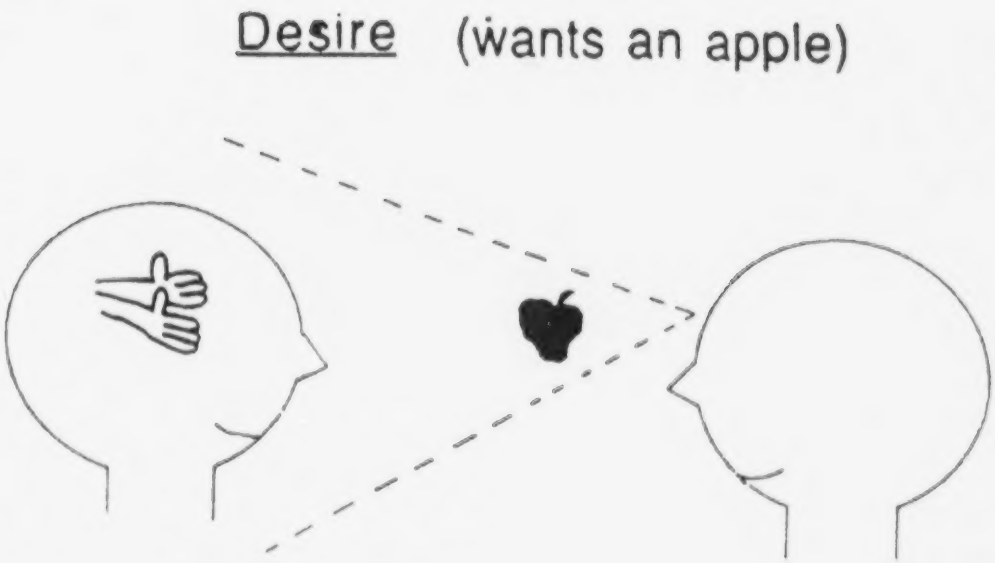


FIGURE 10. REMOVAL OF RESTRAINT

FIGURE 12. ATTRACTION

From Johnson, M (1987) The Body in the Mind The Bodily Basis of Meaning, Imagination, and Reason. Chicago: University of Chicago Press, pp. 45 - 47.

Figure 6



From: Wellman, H. M. and Woolley, J. D. (1990). From simple to ordinary beliefs: The early development of everyday psychology. Cognition, 35, 245 - 75.